

ZOOLOGY—*Notes on Mecistocephalus in the Americas, with a redescription of Mecistocephalus guildingii Newport* (Chilopoda: Geophilomorpha: Mecistocephalidae). R. E. Crabill, Jr., U. S. National Museum.

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Heretofore four centipede species properly referable to the genus *Mecistocephalus* have been reported from the tropics of the New World. These are: *maxillaris* (Gervais), 1837; *punctifrons* Newport, 1842; *guildingii* Newport, 1845; and *janeirensis* Verhoeff, 1938. Although I have never seen a neotropical specimen of the first, I do not doubt that it occurs in Central and South America: *maxillaris* is probably pantropical. Whether the true *punctifrons*, an Indian and southeast Asian form, is established in the Neotropics at all seems questionable, for there is reason to suspect that most or all of those neotropical specimens that have been called *punctifrons* are in fact referable to an historically obscure species, one which I believe may be peculiar to the New World Tropics. I submit that *guildingii* and *janeirensis* both refer to the same zoological entity and suggest further that it may be very widely distributed in the tropical and parts of the subtropical American continents. Indeed, it may very well prove to be as representative of the Americas as are *maxillaris* and *insularis* (Lucas), 1863, of the Old World tropics and subtropics.

This species was initially described as *guildingii* from the Antillean island of St. Vincent by George Newport in 1845 (p. 429). But inasmuch as the original characterization was quite superficial, the identity of *guildingii* has remained in obscurity until the present time.

Dr. Chamberlin we know synonymized *guildingii* under *maxillaris* (1920, p. 185), so that whenever he reported the latter in the Neotropics, as he did most recently from southern Florida (1958, p. 14), we may be sure that his specimens were either *guildingii* or *maxillaris*, and usually the former. In 1893 (p. 470) R. I. Pocock reported having seen specimens, which he called *guildingii* from the West Indies; he expressed the belief that they were not in any case conspecific with *punctifrons* and thereby dis-

agreed with Meinert and Bollman who had thought they were. These men had seen specimens from St. Croix, Cuba, and Bermuda, and T. D. A. Cockerell had collected others on Jamaica. It seems probable that all were referable to *guildingii*. Subsequently no topotypical material from St. Vincent was ever described, so that in his great monograph of 1929 (p. 156) the Count von Attems-Petzenstein was obliged to set aside *guildingii* pending clarification.

The first adequate description—it is, however, not without errors—of this centipede appeared in 1938 (p. 383) when Karl W. Verhoeff redescribed it from Rio de Janeiro, Brazil, as a new species, *janeirensis*. Topotypes of *janeirensis* from Rio de Janeiro that I have seen are, however, essentially indistinguishable from the St. Vincent topotype of *guildingii* described below. Equally similar to the St. Vincent topotype are: a series of Florida specimens recently acquired¹; a specimen from the Panama Canal Zone; eight individuals from the island of Martinique lying in the Lesser Antilles not far to the south of St. Vincent. If it is true that (a) my topotype is really conspecific with the original cotypes, and (b) all are conspecific with the specimens cited above, then all must take the Newport name. What we understand of distribution in the genus and what we know about this particular case strongly suggest both inferences to be true.

Finally, in 1942 Wolfgang Bücherl reported the presence of *punctifrons* and *janeirensis* in Brazil, synonymizing *guildingii* under the former but admitting he had never seen a specimen of the latter. I suspect that all these specimens were actually referable to *guildingii*.

¹I should like to express my thanks to Dr. Howard V. Weems, Jr., and to his colleagues of the State Plant Board of Florida at Gainesville for their kindness in placing these and many other specimens in my hands for study.

It seems to me that the evidence suggests: (1) that the representative and possibly endemic *Mecistocephalus* of the New World tropics is *guildingii*, and further; (2) that this species is very widely distributed from southern Florida, throughout the Caribbean and Central America, southward at least as far as southern Brazil.

The following description is based upon a single female topotype from St. Vincent. To the best of my knowledge it is the first such specimen known since the time of the original description of the Newport species in 1845. Unfortunately his original cotypical series cannot be identified in the British Museum collections today and so must be presumed to be unavailable.²

In the underlying description I have utilized a number of new characters and have attempted to refine some old ones. In both cases it has often seemed desirable to devise new terms to describe them, both to avoid imprecision and to propose an interlinguistic uniformity of unambiguous usage.

Imprecision of designation and the common failure of one worker to understand exactly what another meant by loose and variant usage have injected much confusion into our present, often jumbled heritage. We need to be exhaustive rather than merely minimally (and highly subjectively) analytical in describing typical material; we need to establish an unambiguous terminology and then abide by it. New terms and characters are signaled in the description and then are treated separately at the end of the paper: in addition all are illustrated in the labeled figures.

Mecistocephalus guildingii Newport, 1845

On the basis of published descriptions one could come to the conclusion either that (a) *insularis* and *guildingii* are conspecific, or (b) they are not, but are very similar to one another. On the basis of African material of *insularis* I suggest they are very similar but not conspecific. Briefly, they differ at least as follows. In *insularis* (compare with data on *guildingii* below): clypeal plagulae are as long as or somewhat longer than the anterior areolate clypeus; buccal spic-

ula are deflected anteromedially and reach or nearly reach anterior head margin; body suffused with subsurface blackish-green pigment flecks and patches; basal plate not centrally sulcate; 1st pedal tergite not bisulcate; ultimate pedal tergite very long, sides regularly convergent, posterior margin narrowly rounded.

Topotype: female. British West Indies, St. Vincent Island. (Exact locality, collector, and date are unknown.) U.S. National Museum Myriapod Collection 2546.

INTRODUCTION. Length, 33 mm. Pedal segments, 49. Body shape: anterior five-sixths of body approximately parallel sided, final fifth gradually narrowing. Color: head, prosternum, and prehensors orange-brown; antennae, basal plate, and first pedal tergite concolorous, lightly orange-brown; tergites and sternites of anterior body third white-yellow, becoming paler posteriorly; legs essentially white to very faintly yellow-white.

ANTENNAE. Length, 3.7 mm in Hoyer's mountant. Distally slightly attenuate, each article distinctly longer than greatest width. First 4 slightly indented at outer basal corner, the remaining articles not so. First 7 clothed sparsely with very long setae, the 8th suddenly densely shortly setose as are those following. Ultimate article on outer and inner surfaces of distal half with elongate patches of short club- or spoon-shaped setae, these short and not set into depressions.

CEPHALIC PLATE. Dimensions: length 1.16 mm, greatest width 0.62 mm, i.e., 1: 1.187. Shape: long and very narrow; sides straight but converging very slightly posteriorly. Frontal suture conspicuous, evenly curved posteriorly. From straight posterior margin two diverging setigerous sulci pass forward for about a third the length of the plate. Prebasal plate not detected.

CLYPEUS (Fig. 1). Paraclypeal sutures distinct, complete (Note D). Each bucca (Note B) anteriorly areolate but posterior to spiculum (Note H) smooth and consolidated; buccal spicula well developed, bluntly pointed; buccal stili (Note I) long and curved, anterior incisures (Note A) distinct, deep; approximately the anterior half of each bucca glabrous, as a group the long stiff setae fall far short of the labral area and the anterior incisures of the stili. A typical clypeal area absent, in its position the areolate figures are somewhat smaller and paler. Clypeal plagulae (Note F) much shorter than the anterior areolate clypeal portion; anterior margins

²I am indebted for this information to Dr. G. Owen Evans, who is in charge of the arachnid and myriapod collections at the British Museum.

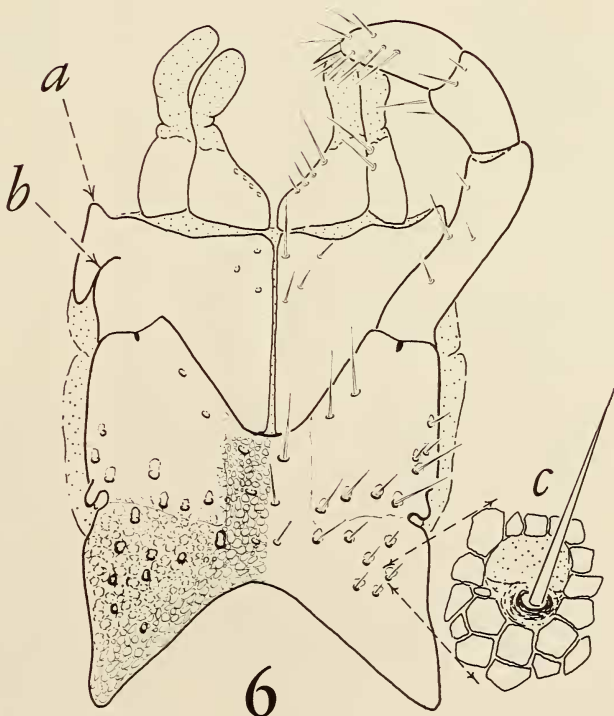
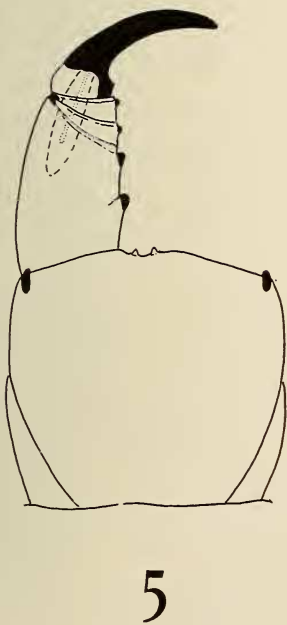
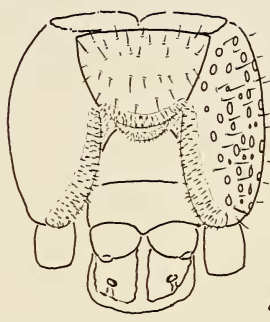
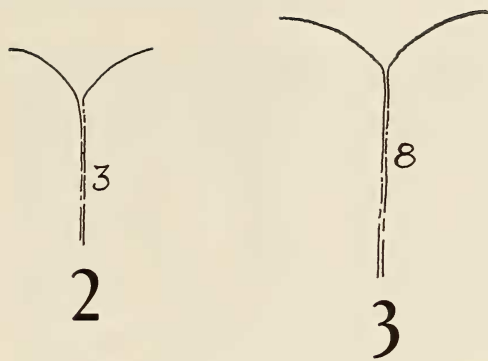
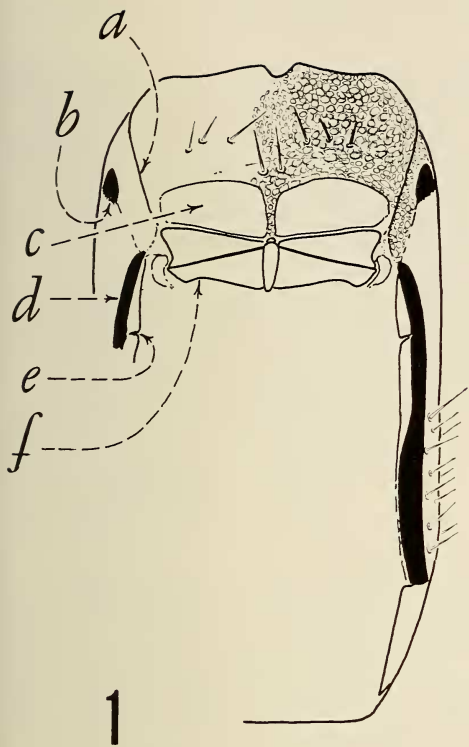
rounded, not square; separated posteriorly from labrum by a thin membranous suture and from each other by a thin areolate strip; their surface nonporous, smooth except for small rugose posteromedial corner. Setae: posterior geminate setae (Note E) essentially paramedian and just anterior to plagulae, with large alveolate sockets; midlypeal setae long and stiff, three on each side, not set into sclerotized islands. LABRUM (Fig. 1). Midpiece not projecting below sidepieces, its sides very narrowly overlapped by sidepieces medially. Anterior division of each sidepiece separated by suture from adjacent plagula; posterior divisions each with a distinct indentation laterally on posterior margin; labral posterior margin smooth, not roughened or serrulate. MANDIBLE. With 6 pectinate lamellae and one membranous hyaline projection (an incipient pectinate lamella?); the comb-teeth of each lamella from 5 (on the first) to 11 (on one of the medials); all teeth hyaline, broad, about equal in length. FIRST MAXILLAE (Fig. 6). Coxosternum with a prominent midlongitudinal suture, this margined anteriorly by a few stout setae; each anterolateral corner extended into a blunt projection, posterior to each a prominent sinuous incisure or suture (Note C); lappets absent. Medial lobes slightly shorter than telopodites; both very long, curved; telopodite lappets absent. SECOND MAXILLAE (Fig. 6). Without medial suture or sign of division; coxosternum medially and posterolaterally coarsely areolate, anterolaterally smooth, essentially consolidated; most setae set into strongly sclerotized semi-alveoli confluent anteriorly with a large vacant or membranous lacuna. Telepodite first article very long, curved, bicondylic basally; apical claw straight, small, very sharply pointed. PROSTERNUM (Fig. 5). Without sclerotic lines; sparsely setose; shallowly areolate; midlongitudinally very shallowly sulcate. Anteriorly shallowly diastemate, with two pale small sharp denticles. Ventral condyles displaced far to each side. TELPODITE (Fig. 5). Flexed, well surpass-

ing front of head. First article with two rounded prominent denticles; femoroid and tiboid each with a rounded denticle; tarsungula with a minute pointed basal denticle. Ungular blades not serrulate. Poison calyx extremely long and thin, the digitiform appendices minute, beginning at the pigmented base of the ungula proper. Poison gland extending posteriorly to level midway between denticles of first article.

TERGITES (except ultimate pedal). Basal plate with a midlongitudinal elongate elliptical sulcus. First pedal tergite with a pair of deep paramedian sulci, these extending from posterior margin not less than three-fourths the distance to the anterior margin but not attaining it. Remaining tergites each deeply completely bisulcate. SPIRACLES. On anterior body third vertically broadly elliptical, thereafter gradually tending toward subcircular. LEGS. Dorsally very sparsely shortly setose, ventrally and laterally moderately setose, the setae long and straight. Pretarsi ventrally *evidently* not concave, at most flat basally; accessory claws acicular, not more than one-third as long as pretarsus. STERNITES (Figs. 2, 3). Rhachides (Note G) anteriorly bifurcate, subtended angles of first three or so approximately 90° when measured at base, thereafter widening slightly to subtend more than 90° (to approximately 110°); bifurcate rhachides detected on sternites 2 through approximately 25, these very weak posterior to the tenth. Sternites of about the anterior body third each with a very long metasternite extending far under the succeeding sternite.

ULTIMATE PEDAL SEGMENT (Fig. 4). Pretergite separated from each of its pleurites by a pronounced suture. Tergite with perfectly straight sides and an evenly rounded posterior margin; width to greatest length = 1:1.35. Pre-sternite distinctly divided medially. Sternite subtriangular, the sides very strongly convergent, the posterior margin rounded and very densely clothed with fine setae, with very dense underlying, apparently glandular tissue; posterior

FIGS. 1-6.—*Mecistocephalus (M.) guildingii* Newport, topotype: 1, Clypeus and bucca; ventral. All setae shown; areolation of left side shown. *a*, Right paraclypeal suture. *b*, Right buccal spiculum. *c*, Right plagula. *d*, Anterior end of right buccal stilus. *e*, Anterior incisure of stilus. *f*, Indentation on right labral sidepiece. 2, Rhachis of third pedal sternite. 3, Rhachis of eighth pedal sternite. 4, Ultimate pedal and postpedal segments; ventral. All setae of sternite and left coxopleuron shown; those of postpedal segments deleted. 5, Prosternum and right prehensor; ventral. All setae deleted. Dashed outline of poison calyx shown inside that of poison gland. 6, First and second maxillae; ventral. All setae of left side shown; setal alveoli and lacunae of right side shown. Areolation of right side shown, those of left deleted. *a*, Anterolateral projection of first maxillary coxosternum. *b*, Right lateral incisure of first maxillary coxosternum. *c*, Setae with alveoli and lacuna *in situ* and enlarged.



FIGS. 1-6.—(See opposite page for legend).

rounded margin followed by a cushionlike mound, this also densely finely setigerous. Each coxopleuron swollen, not extending anteriorly beyond rear margin of penultimate pedal segment; pores large and slightly smaller, distributed uniformly but absent ventromedially, ventroposteriorly, dorsomedially, and dorsoposteriorly; ventromedial edge raised and swollen, densely finely setose and with dense underlying glandular tissue. Ultimate legs very thin and long, with long stiff setae; pretarsus represented by a microscopic terminal bristle. POSTPEDAL SEGMENTS (Fig. 4). Gonopods well separated; basal article broad and flat; second article minute, nipplelike, only indistinctly separated from the basal. Terminal pores conspicuous.

The other specimens that I have examined all agree very closely with one another and with the St. Vincent topotype. In the males the ultimate sternite seems somewhat broader and shorter, the coxopleura shorter than the corresponding parts of the females.

Lengths (in mm): 5 males: 19, 21, 29, 30, 33; 11 females: 27, 28, 28, 30, 30, 30, 32, 33, 33, 33, 36. FLORIDA: Miami, South Miami, Rockdale, Key West. PANAMA CANAL ZONE: Frijoles. MARTINIQUE: Rivière Pilote. BRAZIL: Rio de Janeiro.

NOTES

A. Anterior Incisure (of the Stilus); New Character. The anterior cleft or break on the medial side of the buccal stilus, q.v. (Fig. 1e.)

B. Bucca; New Term (pl. = buccae, L. "cheek"). The so-called cephalic pleuron; that portion of the ventral head capsule bounded anteriorly by the paraclypeal sutures, q.v., and laterally by the folded lateral margin of the cephalic plate; a neutral descriptive term proposed to replace the morphologically implicative "pleuron" of authors. (See also stilus, spiculus, anterior incisure.) (Fig. 1.)

C. Lateral Incisure (of First Maxillae); New Character. The cleft on each side of the 1st maxillary coxosternum. Its presence, absence, development, and position are all significant systematically. (Fig. 6b.)

D. Paraclypeal Sutures; New Character. The sutures or grooves in most Geophilomorpha that pass from the antennal sockets shortly laterally, then ventroposteriorly usually to terminate in the vicinity of the outer end of each labral side-

piece. When present they may be taken to define the lateral limits of the clypeus and the anterior limits of each bucca, q.v. The degree of development, the course, the termination of these sutures all have significance. (Fig. 1a.)

E. Posterior Geminate Setae; New Term. The persistent pair of setae located posteriorly on the clypeal midline. (Fig. 1.)

F. Plagula (of the Clypeus); New Term (pl. = plagulae; L. "a small flat surface or area"). The so-called clypeal or preclypeal consolidated area(s), or in Mecistocephalidae the posterior clypeus; widespread in the order, though in many families much smaller in size. When present, so far as is known always paired and bilateral, each occupying a position just anterior to the labrum on the posterior part of the clypeus. (Fig. 1c.)

G. Rhachis (or Rachis); New Term (pl. = rhachides, rachides, G. "a ridge, axis, backbone"). In Mecistocephalidae the elongate, mid-longitudinal sternal thickenings, especially characteristic of the more anterior sternites. The rhachis is apparently in reality a very narrowly inverted sternal fold whose surfaces, in any case, serve as areas of muscular attachment. Anteriorly the rhachis is bifurcate or not; if bifurcate, the size of the angle *subtended by the bases* of the anterior arms, within limits, has systematic significance. (Figs. 2, 3.)

H. Spiculum (of the Bucca); New Term (pl. = spicula, L. "a small spike or sharp point"). In Mecistocephalidae, the pigmented spikelike point on the anterior part of the bucca, q.v. (Fig. 1b.)

I. Stilus (of the Bucca); New Term (pl. = stili, L. "a pointed writing instrument"). The heavily sclerotized, elongate, usually blunt and thickened inner edge of the bucca; at midlength giving attachment to the maxillae. (Fig. 1d.)

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